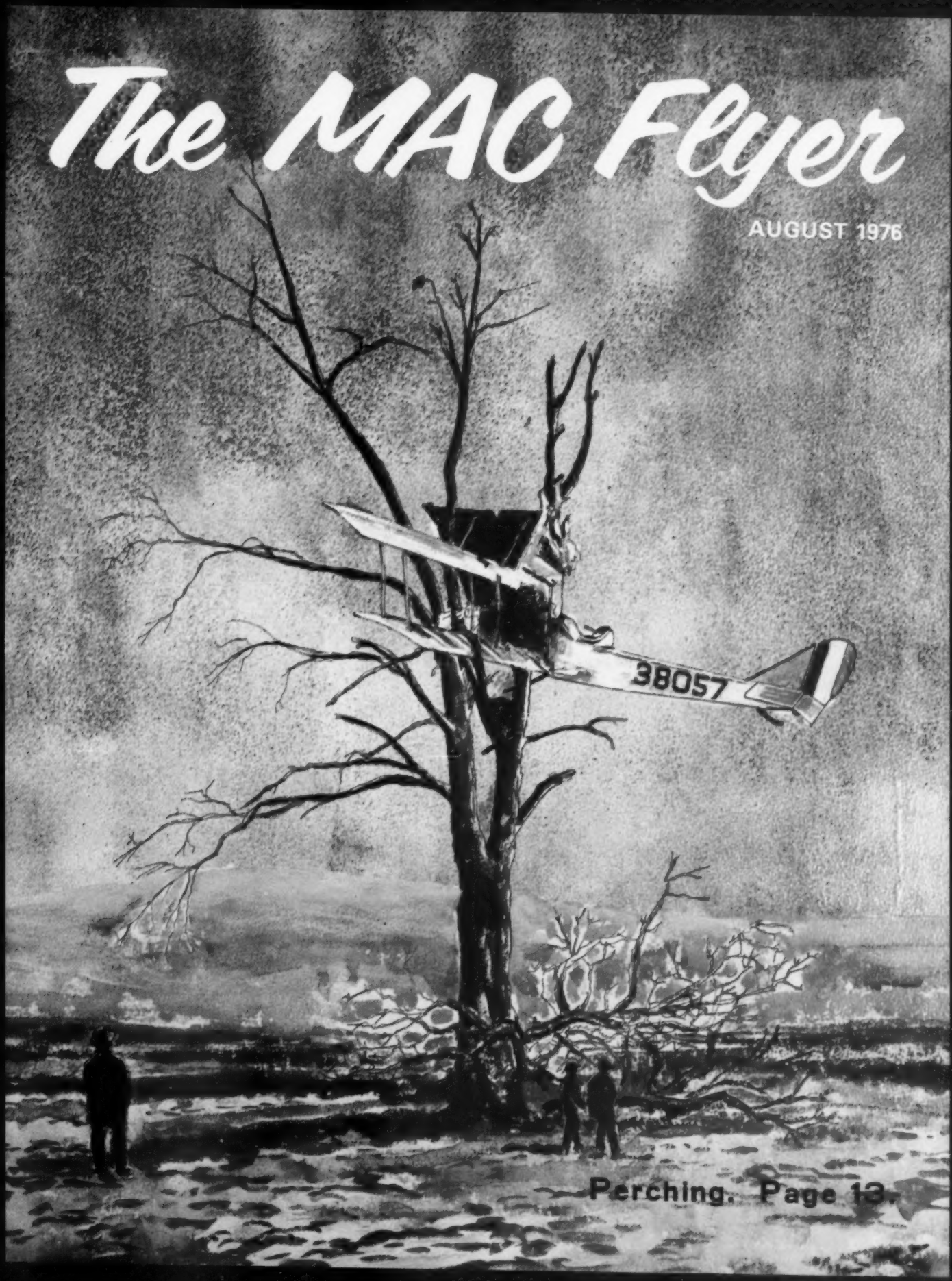
The MAC Flyer

AUGUST 1976



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MILITARY AIRLIFT COMMAND

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in MAC Air Operations

The MAC Flyer

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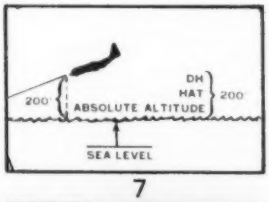

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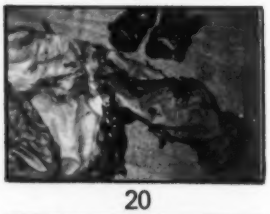

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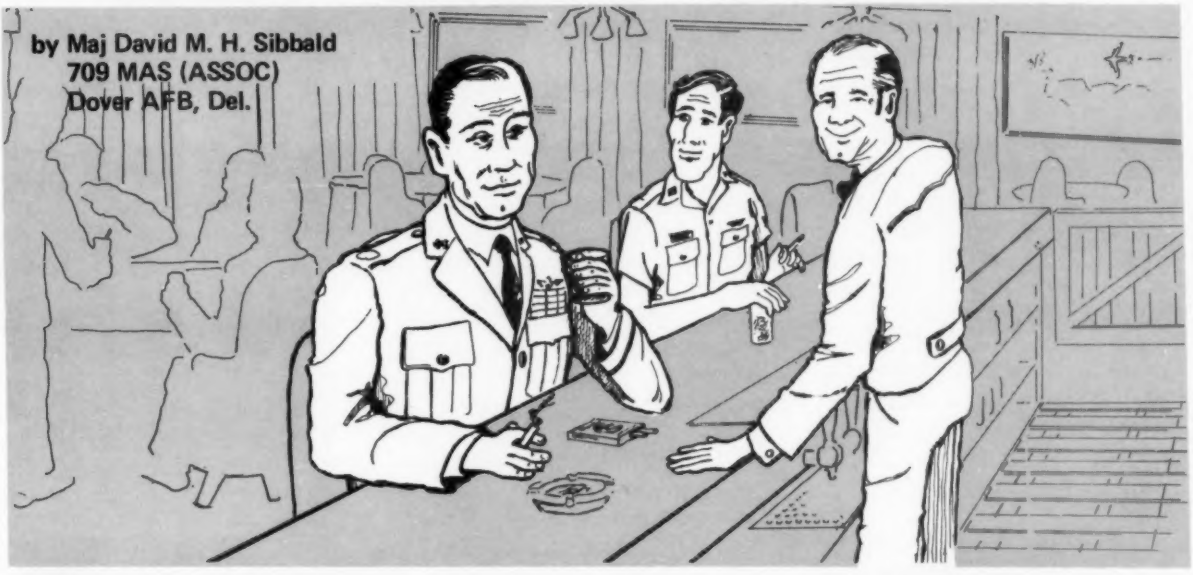
Second Place Winner, 1976 MAC Flying Safety Writing Contest

Listen in as an old head reminisces about 20,000 hours of staying alive.

Mm. Hoom. Scroom.

by Maj David M. H. Sibbald
709 MAS (ASSOC)
Dover AFB, Del.



Bartender! I'll have a very dry Beefeaters martini on the rocks, with a twist, so I will. And this young feller here will also have a very dry Beefeaters martini on the rocks. You don't mind if I call you 'young feller', do you? You do? Well, that's too bloody bad. Today I can call anybody anything I want. An occasion, that's what it is. Drink up! Here's to us, the last of the good guys; there are so very few of us left.

"What was I saying? An occasion. Yes. Your first trip in command of the C-5 and my last. Not quite accurate but close enough. Your first buddy-ride and me, your official buddy, on his last flight in the Air Force. You just arriving, so to speak, and me about to leave.

"I cannot believe the last 26 years have gone so fast. It seems like yesterday I was a brand-new Second John graduating from F-86 school down at Perrin and heading for Korea.

"Korea. A trifle before your time, I suppose. Well, the Sabres are all long gone and in another couple of weeks, so shall I be too. *Mm. Hoom.*

"You know, there are over 20,000 hours in my logbooks and never a scratch on an airplane. There oughtta be a message in there somewhere. I was perusing the old yearbooks from OCS and pilot training the other night—OCS, for crysakes! Officer Candidate School! A very hen-house, six-month program—nothing like that Mickey Mouse OTS that you went through. I've still got the scars. Anyhow, I was looking through the yearbooks and lemme tell you, that's a sad exercise. The number of old friends and old enemies who are no longer with us. Three classmates down in Korea and six more in Vietnam. But would you believe 26 down in no war at all? And, generally speaking, for no good reason either.

"How come I'm sitting here after 26 years and 20,000 hours when a whole platoon of guys, some of them smarter and many of them better pilots than I ever was, are *not* here? If we knew the answer to that one we'd have the flying safety problem licked. *Hm.* You know, I was thinking about Bernie Williams the other night.

"Remember Bernie? No, you wouldn't. Before your time. Bernie was the first, first lieutenant flight examiner in the C-124—at least I think he was. There was some prejudice at the time about having a young

squirt like Bernie upgrade to FE but Bernie really had the tickets. He was a natural pilot. It would irritate me no end to see him climb in that Old Shakey and do so effortlessly what I had to sweat and strain for.

"He knew the books and regs as though he'd written them himself and he had a personality that literally charmed everyone, male and female. I saw him bust our squadron commander one day on a local check and do it so gracefully the poor man went off nodding that Bernie was right and it was time he let up on the paperwork and hit the Dash One occasionally. Anyway, I was going to tell you how Bernie got himself in a box one night and why he's no longer with us.

"Bernie was crew resting at Torrejon and was first out westbound. Must have been about 1966, I think. Unbeknowst to Bernie, some of our SAC brethren were sucking fuel off a couple of tankers just off the southeast coast of Spain. I guess they weren't having one of their better days because the bomber collided with the tanker and everyone had to go over the side. The crews were picked up in short order and then it was revealed to a gaping world that the bomber had had a bellyload of nukes!

"Well, there was one hell of a flap. It made the front pages all over the world and a massive effort was mounted to recover the weapons. It looked like half the U.S. Navy with their recovery ships and diving bells was in Barcelona trying to pick up the pieces. Several C-124's were diverted to support this lash-up and Bernie was one of the first. Down at Moron AB. Bernie loaded up with two school buses destined for Barcelona. Presumably they'd be used to ferry the swabbies back and forth between the billets and the dock, I don't know. So Bernie loaded up and took off.

"Now, what's important is, two other guys from our squadron also had a pickup at Moron for Barcelona. In their flight planning, they elected to fly south where the terrain wasn't too high, and then hang a left and fly around the Spanish Coast to Barcelona—This was before Mother MAC had computer flight plan capability. Anyway, Bernie, for reasons best known to himself and presumably his navigator, decided to go direct. *Direct.* Over some vicious real estate that stuck up in some places to around 14,000 feet. They never made it.

"Several days later they found em scattered along a mile of 13,000-foot high ridge. The navigator's charts showed that they'd carefully plotted all the significant peaks, but had missed the contour lines which came up to their altitude, and it was on one of those contour lines that Bernie and his crew fetched up. If you look in the MACSUP to 60-16 you'll see a reference to plotting contour lines when you're off airways. Bernie's responsible for that paragraph. If you ask me, it's one hell of an epitaph.

"But the contour lines didn't really have anything to do with it. The real question is, what was Bernie doing flying over mountainous terrain with a nonjettisonable load? The Old Shakey was like the C-5 in one respect; you can go to high altitude even if you're heavy, so long as you've got four good engines. Lose one, or worse, two, and you're not gonna be up there too long. I wish someone would tell me why a guy with all Bernie's talent got himself in a box like that.

"The investigation gave no clues. They were rested and hadn't been out in the system too long. There was no question of booze and there was no mechanical failure that they could find. So what was going on in his head that he made a monstrous error in judgment like that?

"I'll never figure it out. He oughtta be here right now having one of Arthur's superb martinis and taking a large part in the big going-away bash you guys are laying on for me next week. Instead he's lying in Arlington and that super-looking wife of his is married to an insurance salesman in Dallas. *Hoom.*

"Arthur! Get your round and rosy over here! Two more of these, if you please, and watch it with the vermouth.

"Funny thing, I don't remember if the Navy ever recovered those nukes.

"Arthur the bartender there, he's been here for over 15 years. And me, for 15 years (with time out for tours at Scott and 'Nam) I've been nagging him about his martinis. But between us chickens, he does them better than anyone else I know. Even my ol' buddy C.R. couldn't find fault with Arthur's style. *Hm.*

"We had an ops officer once. A major he was at the time and a thoroughly nasty guy. A good pilot and all that stuff but an angry man who held grudges and

prejudices and then wrote your OER while they were still fresh in his mind.

"Well, he was down in the Southwest one time on one of those joint Army-Air Force desert war games that are so popular. The fun was over and he was bringing an empty airplane back here. It was nighttime, high summer, with a lot of thunderstorms about, and old Shanker didn't have a working radar set. He was legal as hell not to go, but politics got into it.

"The DCO, as we then called the DO, was on the plane and wanted to be dropped off at Scott for some conference. The accident report didn't address itself to this but I know—I damn well know—from people who were there, that old Shanker got pressured to go when he should have stayed.

"So he went and he never arrived. Next day they picked them up in a Missouri cornfield and from the wreckage they deduced the airplane had been torn apart by a tornado imbedded in a line of thunderstorms. Then one of those marvelous coincidences occurred that continue to make life interesting for me.

"Some college in Missouri with a big weather program had been doing a study of thunderstorms and related nastiness. They were taking photographs of their radar set every few seconds and damned if they didn't photograph old Shanker flying right into the classic scalloped edge, the famous figure '6' on the side of a big cell. You can guess the rest. The cause, of course, was that Shanker took off into an area of thunderstorms without an operable radar. No mention was made of the pressure that was applied to get him off the ground. However, it did exist. His wife got wind of it and tried a federal court case but to my knowledge, she never collected a dime.

"As you are well aware, pressure still exists. On-time departures are the name of the game but I'll tell you what—on-time *safe* departures are the name of the game and don't let anyone tell you otherwise. Crew delays are death, career-wise, and crew delays for no good reason are worse. But worst of all is to get yourself splattered across a piece of hostile real estate because you were the good guy and went when you shoulda stayed. There's always gonna be some guy pushing you to go when the weather's wrong, the airplane's wrong, or something else is wrong. And don't you do it! *Hm. Scroom.*

"You can't say it like that, of course, but let whoever it is know that you ain't about to go until whatever it is that's bugging you has been fixed. You may not make full bull but you'll sure as hell live to a ripe old age surrounded by your prattling grandchildren and your nifty-looking second wife and, best of all, you'll be able to look back on it and say you did your twenty-five or whatever and never put a dent on an airframe. *Mm. Hoom.*

"Arthur! Last call? Two morra these and then we gotta get out of here.

"End of lecture, sonny. I could go on like this forever and I'm sure it gets boring. *Hm.* Thank you. You're pretty damn polite for a young captain. But the thought of you just starting and me just ending triggered something in my head. The last few months, as I've seen the end of my Air Force career approaching, I've had this almost uncontrollable urge to grab the new young guys coming into the squadron and lecture them on how to do it safely. Happily, I managed to restrain myself—until tonight. Lissen, I'm gonna call my sweet young bride and ask her to come out here and get me. Damn right. I never drive after three of those things. We'll drop you at the 'Q' on our way out.

"You know, she said a funny thing to me a few days ago. She said, 'When you get in an airplane and even when you start flight planning, you forget that the kids and I even exist.' 'What the hell are you talking about?' I replied in my usual gracious manner. 'That time you went off to Chateauroux at Thanksgiving,' she says. 'Chateauroux!' I nearly choked on my ham and eggs. 'Chateauroux was fourteen years ago! You've been nursing something all that time?' 'Not nursing it,' she said. 'It just occurred to me.'

"Well, I got to thinking about Chateauroux. The whole squadron got called out on a moment's notice and they wanted us over there in place yesterday. As best I recall, the Chinese were making military noises at the Indians and everyone thought there was a good chance they'd come pouring over the Himalayas at any moment. The Indians were trying to supply their high Himalayan bases with C-119's and it wasn't working too well. You ever fly

that dog? Huh! You didn't miss much.

"Anyway, the ol' Boxcar wasn't hacking it and so the U.S. sent most of our European-based C-130's to help out. That left a big hole in our USAFE airlift so our squadron was sent to Chateauroux to take up the slack. Anyway, it all happened on Thanksgiving Day and talk about a bunch of irate wives! Everyone had a turkey in the freezer and relatives coming or plans made and here we were off on an indefinite TDY. My sweet young bride said a few things under her breath, defrosted the turkey and, after dinner, drove me out to operations. The co-pilot's wife had driven him out too and they sat in the terminal while we briefed and flight planned. When we went out to the aircraft, they drove around behind the old commissary to watch us take off—and as they later related, to pray for an abort. Of course, we didn't. Old Shakey bellowed her rattling, clanking way down the runway and we turned on course for Lajes.

"The tour in France lasted some ninety days and effectively wiped out Christmas and New Year's so far as the families were concerned. Then she brings it up 14 years later. I will never figure them out.

"Maybe Quent Smith is right. When he tells stories like this on his wife he always ends up shaking his head and saying, 'I'm tellin' you, man, they ain't people!' But I'll bet he never says it in front of her.

"Huh?

"Because she's bigger'n he is.

"But you know, I got to thinking about my wife's accusation: that when I get ready to fly, I forget that she and the kids even exist. And it occurs to me that she's right. Not only do I forget her and the kids, I forget my OER, the busted air conditioner, the hassle I just had with the ops officer and the hassles I'll undoubtedly have with maintenance and Twenty-First Command Post.

"Matter of fact, I forget everything which doesn't have to do with the business at hand.

"I know I've been across the pond I'd-hate-to-tell-you-how-many-times and I've got a good idea what to expect at Frankfurt, Mildenhall, Prestwick, or you name it but, nevertheless, each trip is different. The plane and its maintenance status is different, the crew's different, the weather and maybe the route'll be different, too. And being basically a simple soul, it takes all my meager talents to properly flight plan and then fly safely. There is no room in my head for worrying about wife and kids and all the other things you worry about on the ground. On the ground, notice. That's when you worry about those things. Besides, although in the interests of not getting her head too swelled I've never told her, she does such a good job that there's very little for me to worry about. *Mm. Hoom.* I think I just answered my question.

"I think I completed my flying career without prejudice because when I do go fly, I grab my hat and get my coat and leave my worries on the doorstep and then I concentrate on the business at hand. Can it be that simple? Can *I* be that simple? Yes, I sure as hell can.

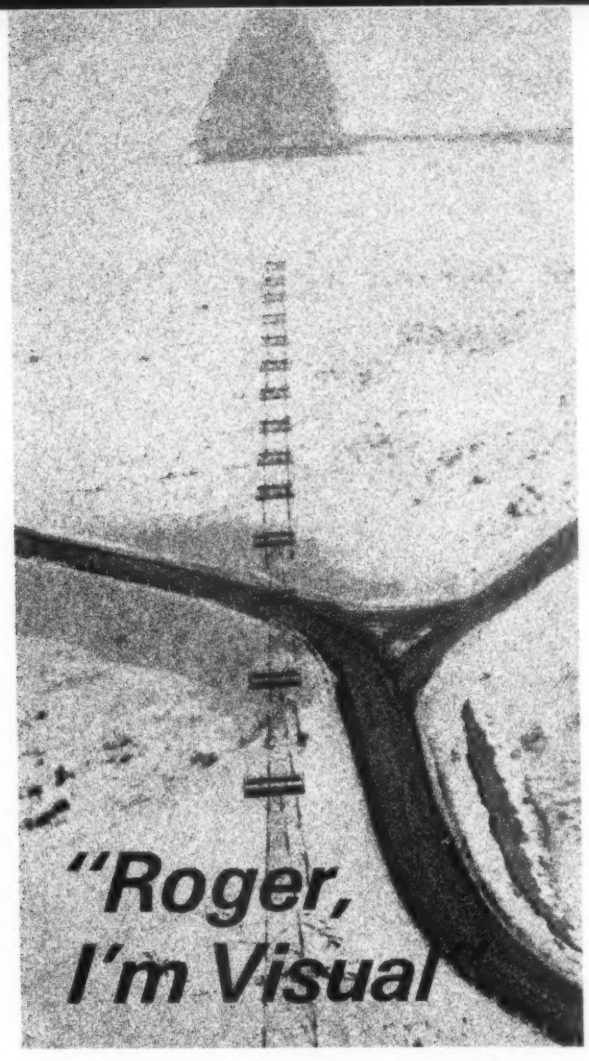
"Naw! I don't want another one. You wanna *carry* me out to the car?

"Now I've got an answer for her Chateauroux accusation. Let's see what she thinks about that!

"Gimme that phone. *Mm. Hoom.*"

THE AUTHOR
ABOUT THE AUTHOR

Major Sibbald is probably about 40 years old and he lives in a converted lighthouse on the shores of the Delaware Bay. At last count his chaotic household included one wife, five daughters, three simpleminded Irish Setters, one very bright Yorkie, two disinterested cats, and an indeterminate number of tropical fish. He writes almost all of his own material with only occasional help from Woodstock, his miniature Yorkshire Terrier. An aircraft commander in the C-5 on Reserve weekends, Major Sibbald flies for TWA in his spare time. He has been around airline crews and MAC crews for so many years that he has a series of deep lines around his eyes and mouth and wears a perpetually hunted expression. He writes occasionally for THE MAC FLYER and is frequently seen weeping over his rusty typewriter.



Mishap with a Moral

. . . was the last radio transmission received by RAPCON from Tally 43. Due to low visibility and the inability of either RAPCON or tower to establish radio contact with Tally 43, the Supervisor of Flying was directed to make a runway check. He started north on runway 15 and discovered a right main landing gear lying on the right side of the runway, approximately 600 feet from the approach end. Proceeding down the runway, he located Tally 43 at a point 4,300 feet from the runway threshold, just left of the centerline. A fire had broken out in the wheel well area. Crash equipment responded and extinguished the fire. Both crew members were outside the aircraft, uninjured.

—Adapted from a major aircraft accident report.

Standing uninjured by a runway and surveying the smoking remains of his former flying machine has to provide a crew member nearly the ultimate in mixed emotions—sort of an aeronautical equivalent of a "good news, bad news" joke. This particular crew came very close to having their whole day ruined; but Fate was kind, and they were around to tell the story to the accident board. Let's see how they came to be grandstand spectators at a no-notice fire-fighting exercise.

It began as a routine training mission. The aircraft was working as advertised, and the weather wasn't bad for a winter evening in that part of the country. After approximately five hours of flying, the crew had completed a night training mission, and were headed back to the local area. About an hour of their scheduled flying time remained.

As they approached home base, they were notified by command post that the weather was deteriorating; at this point, visibility was reported as three miles in fog. Their request to terminate the mission early was approved, and they began an en route descent for a PAR approach.

Meanwhile, weather continued to get worse. Prior to the final approach fix, RAPCON notified the pilot that the RVR was now less than 1,000 feet. The pilot acknowledged this advisory and elected to continue the approach. Just after the aircraft passed one mile on final, the approach controller advised, "Well below glide path," and then a second warning, followed by the transmission, "If runway or approach lights not in sight, climb and maintain one thousand three hundred, heading three four zero. Acknowledge."

The pilot replied, "Roger, I'm visual."

Seconds later, the aircraft's main landing gear struck six approach light stanchions, beginning some 1,100 feet short of the overrun. The aircraft then touched down in the overrun, shedding both main gear, and slid to a stop on the runway.

There were more errors involved in this one than simply the pilot's decision to press on when the weather went below minimums. Investigators found that the too-low RVR had been passed to RAPCON and the command post some 18 minutes prior to the accident, but that the information was not relayed to the supervisory personnel who

could have directed a diversion.

Navaid Selection

Other questionable decisions in the cockpit contributed to the final bash. Although the runway was equipped with an operational ILS, the pilot decided to back up the approach with tacan, thus depriving himself of additional glide path information. In addition, investigators found that the crew had used the radar altimeter as the primary means of determining the decision height. At this base, terrain elevation at the missed approach point is some 60 feet lower than runway touchdown zone elevation.

Directives on instrument approaches and weather minimums differ between commands but neither MAC nor the command involved in this mishap permit landing at a field which has been reported below minimums. The pilot could have continued his approach to decision height and executed a missed approach; this is one of the options permitted by his major command. The pilot might have been wiser to request clearance to an alternate airfield or a holding fix, but he never made such a request.

Even so, he might have gotten the aircraft on the ground in one piece if he'd had back-up glide path information. Landing in very low visibility isn't impossible, but it does require that instruments be used to maintain glide path nearly all the way to touchdown. An RVR of less than 1,000 feet simply does not permit normal visual cues to be used to judge altitude and descent rate. Strobes and runway lights can be used for alignment even in very low visibility, but under these conditions all the normal visual cues for pitch reference are absent.

Proper selection of navaids would have helped greatly here. The PAR controller was rushed in his missed approach call and omitted the words, "Too low for safe approach." An ILS display would have immediately presented the pilot with an indication that he was dangerously low. The tacan backup gave him course and distance information—but that wasn't all he needed.

HAT versus Absolute Altitude

Using radio/radar altimeter to back up the barometrics during an instrument approach is a good procedure, and MACSUP 1 to AFR 60-16 requires it. But using radar altitude as the primary means of determining decision height or MDA on other than a CAT II ILS can be disastrous—and for the reason why, let's look at the difference between HAT (height above touchdown) and absolute altitude.

HAT indicates the elevation of the decision height (DH) or minimum descent altitude (MDA) above the highest point in the touchdown zone. It is published in conjunction with all straight-in approaches, precision or nonprecision. For circling approaches, height above airport (HAA) indicates the height of the MDA above field elevation. Here is the simplest possible example.

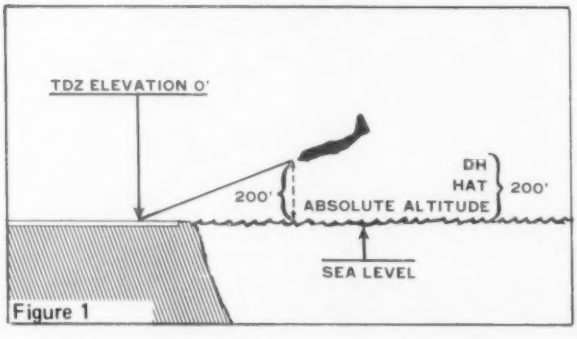


Figure 1

In figure 1, the runway and terrain are perfectly flat, with an elevation of zero (sea level). At the published DH of 200 feet, the aircraft is 200 feet above the touchdown point and 200 feet above the terrain beneath it. The radar altimeter would indicate an absolute altitude of 200 feet. Simple—but now let's look at the real world.

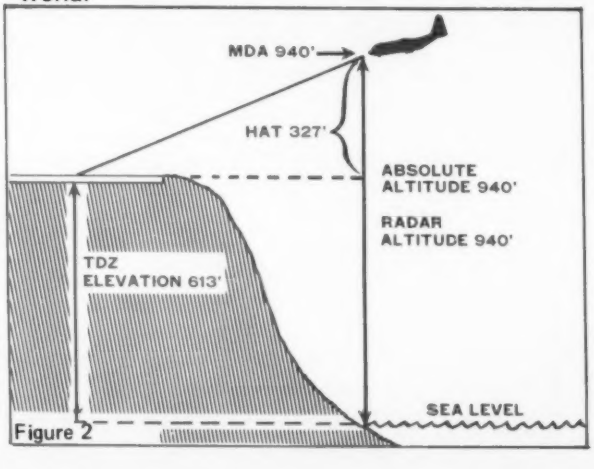


Figure 2

In figure 2, the touchdown zone is at an elevation of 613 feet above sea level—but just beyond the end of the runway, the terrain drops off rapidly to the ocean. At the missed approach point, the aircraft is at an MDA of 940 feet; this is also the absolute altitude, since the aircraft is over the water, and 940 feet would be indicated on the radar altimeter. But the HAT is only 327 feet—the difference between the elevation of the touchdown zone and the MDA. The consequences of flying the aircraft down to a radar altitude of 327 feet on this approach are obvious.

Let's see what all this looks like on the approach plate (figure 3).

can't rely on an altitude warning light or tone. (If you do get an altitude warning in this situation, you're already 286 feet *below* the touchdown zone elevation.)

Now consider an approach to an airport located in irregular terrain. At DH or MDA, the terrain elevation immediately below the aircraft—which is the only thing the radar altimeter can measure—may be the same as the touchdown zone elevation, but it most probably is not. In this case, setting HAT in the radar altimeter can provide only a rough backup for the barometric altimeter—and if the terrain is significantly lower than the TDZ elevation, flying to

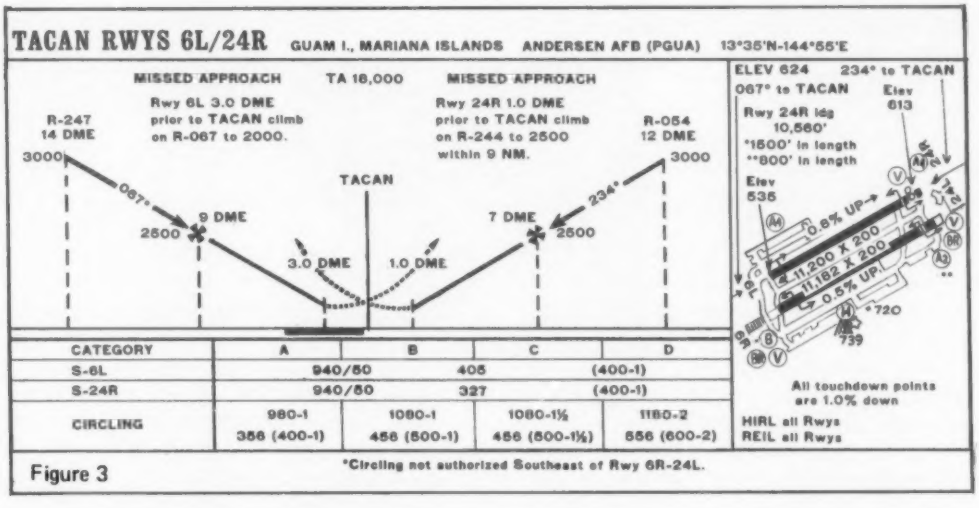


Figure 3

The approach diagrammed in figure 2 is the straight-in tacan to runway 24R. Notice that the HAT is based on touchdown zone elevation for that runway—*not* on the published field elevation of 624 feet, which is the highest point on any usable runway surface. This difference can be significant; for example, the TDZ elevation for runway 6L is 535 feet, which is 89 feet below published field elevation.

The fact that the approach to 24R is over water makes the radar altimeter particularly useful as a backup. Since you know the elevation of the terrain immediately below the aircraft (sea level), you also know that absolute altitude and barometric altitude at MDA will be the same—940 feet. However, since MACSUP 1 to AFR 60-16 requires setting the altitude trip marker on HAT, you'll have to read the instrument; you the HAT using radar altitude could ruin your whole day.

One more note on radar altimetry during an approach. The HAA for a circling approach is based on the published field elevation, which, as we said, is the highest point on a usable runway surface. It does *not* take into account the terrain on the airport itself, which can vary considerably; Kadena is a good example. Thus, a radar altitude indication of less than HAA does not necessarily mean you're too low; it may simply mean that you're flying over an area where the terrain elevation is higher than at the point on the runway surface which determines the field elevation. Stick to the published MDA on your barometric altimeter, and you'll be assured of the terrain clearance guaranteed by TERPS.

It can get expensive, as well as uncomfortable, fooling around with Mother Nature.

Weather Report

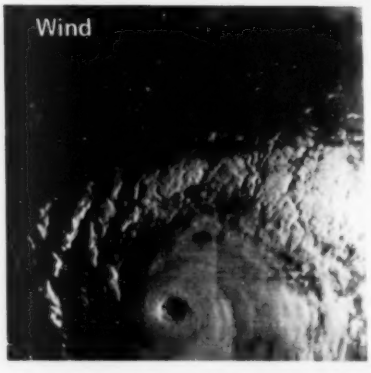
Does weather wreck airplanes? Well, not all by itself—or at least, it's very seldom the only cause of an aircraft mishap. But the number of aircraft accidents/incidents in which weather was one of the contributing causes has been steadily increasing. The rate of weather-related mishaps has climbed from 1.6 per 100,000 flying hours in 1970 to 5.06 in 1975; during those six years, such occurrences have cost the Air Force over $25 million. During 1975 alone, the dollar loss was approximately $3.5 million.

Of the major commands, MAC leads the pack in the number of weather-factor mishaps (as well as in the number of hours flown.) In 1975, the command experienced 36 such incidents; the runner-up had 27. The total throughout USAF: 159.

In MAC, the C-130 and C-141 are the chief contributors to the statistics. When the relative flying hours of the two aircraft are added to the equation, the Herky really stands out as a likely victim of Mother Nature—which isn't surprising, considering its normal cruising altitudes and the mission of the weather recon birds.

The seasons also have a relation to the statistics. MAC's weather mishap experience shows as a fairly smooth bimodal curve with peaks in late summer and late winter, and lower levels in late spring and fall.

But there's much more to the story than plain statistics. Many individual factors were cited in the 1975 reports—wind, rain, hail, lightning, and so on. Let's examine these factors individually, and their effects on aircraft mishaps throughout the Air Force.


Wind

Of the individual weather conditions listed, wind was responsible for the fewest incidents and the least damage. Typical mishaps included a Starlifter which scraped a wingtip on landing during a drastic change in crosswind component and a C-5 which suffered a hot APU start due to wind blowing into the APU exhaust. However, the statistics don't take into account wind shear, which has only recently been recognized as a significant contributor to takeoff and landing accidents. Review of the incident and accident reports for the last few years may make a significant difference in the importance of wind as a cause factor.

Rain

Those April showers may be good for your backyard broccoli patch, but they also contribute to USAF's annual crop of statistics. Last year, a T-38 was plagued with extensive electrical malfunctions after heavy rain entered the cockpit at an en route stop, while another Talon suffered FOD to both engines and a flameout of one of them after hitting a deep puddle on takeoff roll.

It's not only the small airplane drivers who have to beware of rain on the runway, though. At high speeds, water splashing from a deep puddle can take on the force of a shotgun blast. The C-141's low ground clearance makes it particularly vulnerable to this sort of damage; at least one Starlifter lost an ADF antenna to standing water during 1975.

Hydroplaning is another unpopular wet-weather phenomenon—and as a C-135 crew discovered, sometimes even a sophisticated anti-skid system

isn't enough to handle it. The runway was reported dry as the crew began the approach; but since rainshowers were reported in the area, they had prudently based their landing data on a wet runway. On short final, tower reported light rainshowers had just begun. But by the time the big Boeing had touched down, the light shower had turned to heavy rain, and the runway was already covered with standing water. Hydroplaning began at about 120 knots. When braking action finally returned, the pilot only had 3,000 feet of runway left and 90 knots of airspeed to lose. He wrestled his machine to a halt in the overrun—fortunately, without damage.

Hydroplaning conditions can develop with amazing suddenness. In this case, the change from a dry runway to an undetermined depth of standing water took less than two minutes. The problem was very probably aggravated by the film of rubber particles, dust, and oil which is lifted from the runway during the first few minutes of a rainfall and acts as a very effective lubricant until it's washed away.

Turbulence

Those "air pockets" your Uncle Charlie used to complain about are like oh-dark-thirty alerts: as long as you're flying, they go with the territory. Most of the time, turbulence is just annoying. The severe variety can be pretty scary; but, historically, it hasn't done much damage to airplanes. The average airframe seems to be able to take a lot of knocking around without any ill effects.

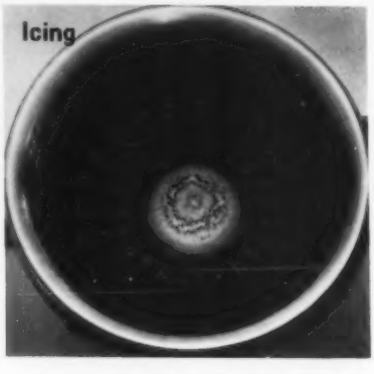
The occupants of that airframe are a different matter, however. Unsecured people and objects were the major victims of turbulence in 1975; a C-130 loadmaster whose back was injured as the aircraft jolted through a sudden downdraft is a typical example. Unforecast, unreported clear air turbulence is most likely to produce this sort of mishap; other than staying strapped in whenever you don't have to be moving around, there's not much to be done about it.

Other incidents involving turbulence include a T-39 engine flameout at FL 410 in moderate chop—and two F-100 pilots who had the same attention-getting experience while in a three-ship formation! Operation near the limits of the engine envelope can be pretty tricky when you add rough air to the equation.

Hail

We've all seen those dramatic pictures of radomes, leading edges, and other aircraft surfaces turned into junk by hail. Usually, the caption reads something like, "C-141 beaten up by hail during thunderstorm penetration." Immediately, we think, "Well, why did the idiot fly through a thunderstorm in the first place?" All you have to do is stay clear of them big ugly muthas and you're safe from hail—right?

Wrong. In 1975, hail did nearly $27,000 worth of damage to five different aircraft—none of which was close to a thunderstorm. An F-111 accounted for $11,000 of the total while flying in clear air between two build-ups over 20 miles apart, and a C-130 contributed another $8,400 worth of radome while flying in IMC with no significant weather on the radar. Certainly, you can expect hail in the immediate vicinity of a big nymphocumulus. But what looks like an innocuous rainshower can hammer you pretty thoroughly, too.


Icing

Most turbojet drivers can't manage to get too excited about icing. After all, the days when C-47's and C-124's struggled for hours through freezing murk are gone, and we modern aviators merely power our way up to the clear air of the stratosphere before icing has a chance to affect us.

Well, sometimes—and sometimes not. A look at the statistics for the last six years shows that jet aircraft in the en route phase of flight accumulated damage from icing alone which amounted to nearly *eight million dollars*. During 1975, over half a million dollars' worth of damage was attributed to ice—primarily FOD due to ice ingestion.

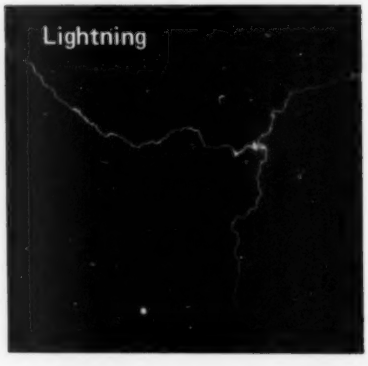
Much of this damage resulted from relatively brief encounters with ice during climb and descent; for example, a B-52 spent 10 minutes in rime icing and emerged with damage to five engines. During a penetration, a T-39 encountered clear ice between 18,000 and 11,000 feet; both engines were damaged.

Other encounters were more extensive. Another B-52 ran into icing on a low level route. The crew, however, pressed on—and eventually observed an ice accumulation on the wing leading edges of *three to four inches*. Engine damage from that one amounted to nearly $90,000.

An F-111 pilot discovered that induction icing is with us even in the jet age. After experiencing compressor stalls, he brought his bird home, where ice damage to one engine was discovered. The entire flight had been conducted in clear air, but the humidity was high and the temperature was low. Ice formed in the engine inlet and eventually broke free while the aircraft was being operated at a low airspeed and high power setting.

Another sort of icing got the attention of a C-135 crew. Rain had frozen inside the engine, preventing the N1 compressor from rotating; a fire during engine start resulted.

In terms of dollar cost, icing has been the most significant of all individual weather factors over the last six years. Thunderstorms have claimed slightly more but, of course, they include more than one weather hazard.



By far the greatest number of weather mishaps results from lightning strikes and static discharges. Of the 36 incidents in MAC during 1975, 20 were due to lightning—and of these, MAC C-130's accounted for 15. Again the Herky's normal operating altitude is significant, since a high percentage of lightning strikes occurs near the freezing level.

Lightning, like hail, can occur far from the vicinity of a thunderstorm. In one instance, a KC-135 was struck by lightning during descent; there were numerous thunderstorms in the area, but the nearest was 25 nm away. Static discharge is very similar to a lightning strike, but it doesn't depend on the presence of thunderstorms and can occur in any cloud type.

Damage from lightning strikes and static discharge is most often confined to minor holes in radomes, loss of antennas, and so on. But far more serious consequences sometimes result. A B-52 which encountered a static discharge in a snowstorm wound up with fuel streaming out of two pencil-size holes in an external tank. And an F-4 was destroyed when a lightning strike exploded an internal fuel tank, blowing off a wing.

There's no guaranteed method for avoiding lightning, but there are a few techniques which can help. Avoiding thunderstorms is an obvious aid to longevity and will keep you clear of hazards much worse than lightning. Since the amount of static buildup on an airframe depends on the speed and mass of the aircraft, slowing down when penetrating weather might be a good idea. To reduce the odds of a strike even further, try to spend as little time as possible near the freezing level.

Cutting the Losses

Twenty-five million dollars is a lot of money, and a lot of combat capability. As long as we fly for an all-weather Air Force, we can't avoid some of the hazards that Mother Nature provides. But maybe we can whittle that 25 megabuck figure down a little by understanding some of the things weather can do to us.

Next time you've successfully tiptoed around a particularly nasty thunderbumper, try to fight the tendency to heave a big sigh of relief; there are a lot of other meteorological gremlins around. You'll fly safer and live longer by keeping your weather eye open all the time.

An accident board interviews a truly unusual witness. Firmly rooted in his convictions, he offers some points to ponder about . . .

Perching Procedures and Problems

by Capt William R. Caldwell
MAC/IGFF

The following interview was taken from the transcript of a recent aircraft accident board. The actual names and places contained in the transcript have been changed to insure no one suffers personal harm from the contents thereof. The testimony primarily expresses the opinions of the witness and should be carefully weighed by the reader for possible prejudice.

BOARD PRESIDENT: Good morning. I'm Colonel Trimmer, president of this investigation board. The purpose of our investigation is to find out what caused the accident in which you were involved, and we cannot use the information you provide for any other reason. We would like you to begin by stating your full name, address, occupation, age, and reason for being at the scene of the accident on the night in question.

WITNESS: Well, Sir, my name is Maple, Red Maple, and I live just west of the base in the forest out there. Let's see—you wanted my occupation.

BOARD PRESIDENT: Yes, Sir. We would like to know what you do for a living.

WITNESS: Well, now, that's kind of a hard question to answer 'cause I mostly just stand around. Lots of folks seem to think I look pretty, 'specially in the fall, and sometimes they stand under me to get away from the rain or sunshine. Never could understand why anybody'd want to get away from the sunshine. You'd think their leaves'd bleach or somethin'. Oh, yeah—sometimes a bird or two will move into me in the summer, or maybe a squirrel, but that's about all there is.

About how old I am—that's kinda hard to say, too. I guess my trunk is about 75 now, but most of the leaves are only a few months. Guess

75's as good a number as any.

As far as what I was doin' there—well, y'know, once you put down roots in a place, it's kinda hard to just pack up and leave—no pun intended.

BOARD PRESIDENT: Ah, yes, well, thank you. Now would you please try to recall just what happened on the night you were struck by the airplane?

WITNESS: Airplane? Oh, you mean them big birds. Well, I was just standin' there watchin' the goin's-on; like I told you, that's really about all I can do. It was gettin' a little nippy 'cause the sun had gone down a long time ago. Everything in the woods was startin' to quiet down, too. About the only thing happenin' was those big birds that roost down at the base were buzzin' around. Y'know, it's funny about them; they fly around just about any ol' time and don't ever get tired. Most of the birds I know have to get some rest once in a while but these fellas just keep goin' all the time. There's been many a time I've watched 'em for hours and they just go round and round and never stop, except sometimes when they make one of them touch or go things and then they're not on the ground long enough to get any rest anyways. Guess when you're as big as they are you don't need to rest so often. I guarantee you one thing, though, I sure am glad none of 'em ever tried to perch in me before.

BOARD PRESIDENT: Well, Mr. Maple, I think we can all see why you would feel that way. How does your top feel today, by the way?

WITNESS: Oh, I reckon I'll live. I was pretty weak for a few days 'cause of losin' all that sap and those leaves, but right now I feel pretty good.

BOARD PRESIDENT: So you noticed a lot of activity around the base. Would you please go on?

WITNESS: Well, like I said, it was a little nippy and looked to me like it might start foggin' up pretty soon. That happens a lot around here this time of year. One of the blue jays I know flew by and said that the fog was startin' to come across the base from the water and I'd better get ready for a chilly night. He couldn't find his regular tree, so he was headed for his alternate.

BOARD PRESIDENT: Please go on.

WITNESS: Well, after the fog started comin' in, the airplanes, as you call 'em, started comin' back to the base to roost. They didn't take off again like they usually do. Well, finally there was just one of 'em left in the air, and that's the one that tried to perch in me.

BOARD PRESIDENT: You mean that the last airplane was the one that accidentally got too low and hit you?

WITNESS: No!! Weren't no accident about it; he was headed right for me, right for the top part where the other birds like to perch. He was plenty high when he started at me, but just got lower and lower until he realized he was goin' too fast to land in me. That's when he started to climb back up again. I guess it was so he could make another try. Boy, am I glad he didn't.

BOARD PRESIDENT: And why is that?

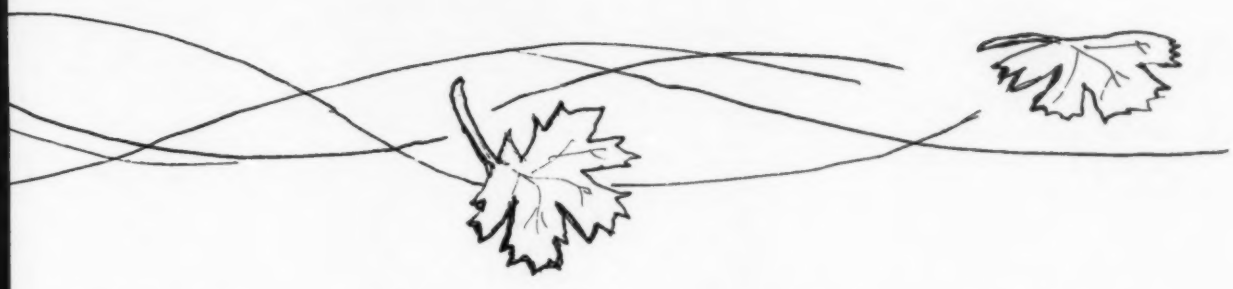
WITNESS: Well, I know I'm pretty big, even for a 75-year-old tree, but I don't think any tree is big enough to hold a bird like that.

BOARD PRESIDENT: You said he was climbing when he went through you. Why do you say that?

WITNESS: Well, you know, I've listened to a lot of these big birds go over me, and most of the time they're pretty quiet, but every now and then one of 'em gets real noisy and then it starts climbin' again.

BOARD PRESIDENT: Did you hear that happen on the night of the accident?

WITNESS: Yes, Sir, I sure did. This bird kept get-



tin' lower and lower and all of a sudden it started roarin' somethin' awful.

BOARD PRESIDENT: What happened then?

WITNESS: I think he started to climb a little bit but not before he went through my top. I could see he was goin' to hit me, but what can a tree do? You just gotta stand there and let it happen. I guess I was lucky, though, 'cause most of the bird missed me. And ya know what?

BOARD PRESIDENT: No, what?

WITNESS: Well, I'm pretty sure I got in a few good whacks at him, too. I bet I put a few dents in his one wing. Yep! Bet he'll think twice before he tries to perch in me again.

BOARD PRESIDENT: After you were struck, what did the airplane do?

WITNESS: Well, you gotta remember that things were a little blurry for me with all that sap runnin' outa me, but I'm pretty certain he just kept goin' and it sounded like he landed over at the base. At least, I didn't hear any more big birds flying that night. So I guess they all went to roost. That was the smart thing to do with the fog and everything.

BOARD PRESIDENT: Why do you say that?

WITNESS: Well, I've known quite a few birds, and they all say the same thing: "When it's foggy, you can't see if you're right side up or not, and what's worse, you can't see where you're at." So usually the birds I know head for their trees when the fog comes in and stay there till it lifts. That's what ol' Charlie Jay was doin' when he told me about the fog comin' in that night. Y'know, the big birds usually do the same thing. I guess that's why they quit doin' them touch or go things that night.

BOARD PRESIDENT: Well, thank you, Mr. Maple. The information you have presented really clears up a few points we were looking into. By the way, is there anything you can think of that might prevent this sort of thing from happening again?

WITNESS: Well, I've been thinkin' about that a lot. Remember, I told you how people come stand under me sometimes? Well, a couple months back two of 'em were lookin' up at me and talkin', and the one of 'em said somethin' like, "Sure is pretty in here under the trees." And the other'n said, "Yeah, I've seen 'em from on top enough times, and pretty close sometimes, too." And then the first one said, "Well, Charlie, if you'd use the VASI or get a GCA when it gets dark or foggy, you wouldn't get so close to the trees." I'm really not too sure what they were talkin' about, but if it'll keep any more of those big birds from tryin' to perch in me, I'm all for it.

BOARD PRESIDENT: I think you have a good point there, Mr. Maple. We'll make sure it gets into the report.

WITNESS: Well, Sir, if you don't need to talk to me about anything else, I'd sure like to get back home. You folks sure don't get much sun in here, and all them wooden chairs and tables are kinda depressin', if you know what I mean.

BOARD PRESIDENT: Certainly, Mr. Maple, we'll get you back home right away.

This concluded the interview, and the witness was transported back to his forest home and provided with the services of a tree surgeon at Air Force expense. As the colonel promised, the formal report included some of Mr. Maple's ideas:

1. Whenever it looks like the field is going below minimums, get the bird back on the ground while the weather will still permit it.

2. Make approaches at night or in weather using VASI or precision approach facilities.

3. If the field is below minimums, find an alternate base and perch there.

Rendezvous at

As the long Thanksgiving weekend finally arrived, a Lockheed L-1011 jetliner lifted easily into the night sky of Philadelphia. Its 103 passengers and 11 crew members were to have a smooth and uneventful flight to Los Angeles, and to family, friends, and turkey. The TriStar leveled off at FL 350 and headed west along its planned route, which included the Carleton, Michigan VORTAC and jet route 584.

Twenty-four minutes later, at O'Hare International Airport, a DC-10 had just begun its scheduled flight to Newark, New Jersey. For the 192 souls on board, the flight was to be neither uneventful nor smooth, and it would not terminate in Newark. Like the L-1011, the big trijet's route would take it along J-584 and over the Carleton VORTAC.

Cleared To Climb

For the first 35 minutes of its flight, the DC-10 received progressive climb clearances from Center. Then, at 1916 EST, the flight was cleared to climb to FL 370 and directed to contact an adjacent center.

As the new controller accepted the handoff and acknowledged the DC-10's radio call, his plan view display was already showing a data block for the L-1011. A technological marvel, the computer-generated display showed the TriStar approaching the Carleton VORTAC. It also showed alphanumeric readouts of the trijet's altitude (FL 350) and its ground speed (408 knots). Designed to ease the controller's incredible workload in high-density traffic areas, the system showed a great deal of promise. It was expected to make air traffic control easier and safer everywhere.

It was also expected to be a great help in preventing midair collisions.

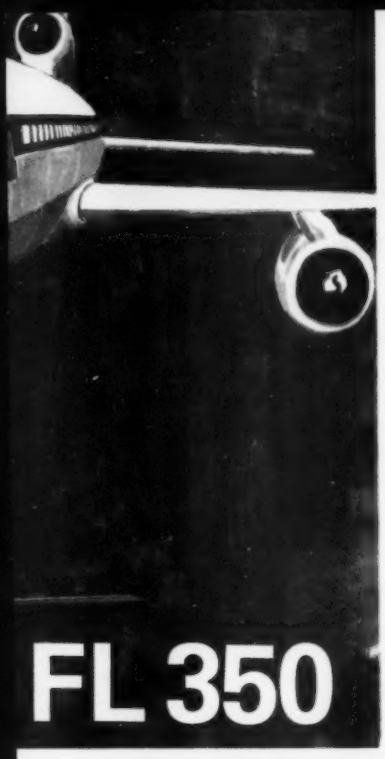
Potential Conflict

Now the display began to show a data block for the climbing DC-10. Approaching Carleton from the west, the jumbo was passing FL 260 for its assigned cruise altitude of FL 370; ground speed was 465 knots. As the controller watched the display, he realized that there was a possible conflict between the climbing aircraft and the L-1011 cruising at FL 350. But the extensive capabilities of his computerized equipment reassured him. Certainly, any real danger would become apparent in plenty of time for him to take action. Satisfied with the situation, he turned his attention to another problem: trying to insert a flight plan change into the computer for a Learjet bound for Canada. There was a problem with the routing which occupied the controller's attention, and for the next six minutes there was no communication between Center and the DC-10.

A second controller, who normally assisted in manning the position, was at lunch. As he returned to take over the position, the DC-10 was about 40 nm west of the L-1011; the alphanumeric display showed the DC-10 passing FL 330 in a climb. The two aircraft were on reciprocal courses and converging at over 850 knots.

Incomplete Briefing

As the controllers made the transfer of duties, they went through the mandatory briefing. The L-1011 was mentioned; it had already been handed off to the next center, but the present controllers would maintain responsibility



FL 350

Who said, "A miss is as good as a mile"? It would be hard to convince some of the airline passengers involved in this strange tryst.

for the flight for several more minutes. The troublesome Learjet was also discussed, as were several other aircraft. The DC-10 was not mentioned.

As the new controller assumed his duties, a climbing airliner called to ask about the weather. "Any idea of the tops?"

"Well, they were at 35 earlier," the controller responded. "Just a minute, let me check." A discussion of cloud heights followed, first with the L-1011, and then with another aircraft.

Finally, the controller noticed the converging tracks. His first reaction, he said later, was one of disbelief. The data block for the DC-10 showed FL 345, climbing to FL 370; the L-1011 was level at 350. The aircraft were head-on to one another and three to four miles apart.

Thinking that there might be some lag in his readout of the DC-10's altitude, the controller queried, "What is your altitude?"

"Passing 347 at this time," the flight crew answered, "and we can see the stars above us, but we're still in the area of the clouds."

The controller's response flashed back: "Descend immediately to FL 330."

"Descending to 330 at this time," the DC-10 crew replied. The controller watched as the data blocks merged.

100 Feet from Disaster

Minutes earlier, the crew of the DC-10 had been scanning the weather, trying to get an idea of the height of the cloud tops. Seeing the lights of the approaching L-1011, the captain remarked, "There he is," referring to an aircraft which had been mentioned earlier and which he and his crew believed to be at FL 370. A second later, as the call for immediate descent came through, the captain realized what the lights really meant. He shoved forward on the yoke.

In the cabin, the flight attendants were serving dinner. Three passengers, despite the illuminated "Fasten Seat Belts" sign, were not strapped in; another passenger was adjusting her seat belt. In an instant, negative G forces threw passengers, attendants, serving carts, and other loose objects against the ceiling, where they were pinned as the DC-10 dived to avoid the onrushing TriStar.

Six seconds later, the captain began his pullout from the dive. People, food, serving carts, and debris smashed into the seats and floor with the force of over two G's. Bones snapped; shattered plastic cups lacerated skin. Then it was over, and the crew of the DC-10 began to pick up the pieces.

Aboard the L-1011, no one realized that death had been only a microsecond away.

Less than 30 minutes later, the DC-10 was on the ground in Detroit, where the injured passengers and attendants were hospitalized. Only three people—the passengers whose seat belts were not fastened—were seriously hurt. The aircraft itself was inspected and no structural damage was found; it was later flown to a maintenance facility for repair of the smashed interior.

Man vs. Machine

Investigators concluded that overreliance on some very sophisticated equipment was one of the factors involved in the accident. "Advances in technology," they remarked, "do not necessarily insure greater reliability and safety."

The remark referred to air traffic control systems, but it is equally applicable to the increasingly complex gadgetry on the aircraft we fly. No matter how sophisticated the system, it is still nothing more than a tool, and like any tool, it must be used with all the skill and judgment the human hand and mind can provide.

Dear Doc

Has your annual flight physical gotten to be a pain in places other than the neck? The Doc provides the inside story.

by Maj William Sullivan, MC
USAF Medical Center Scott

Dear Doc:

I just had my annual flight physical. Now I know that at 39 I'm practically over the hill, but you guys act as though I need to be taken apart and put back together. I'd almost gotten used to being wired up like Frankenstein's monster—but this physical was something else! Gallons of icky-tasting syrup, a poke in the eye with a dull stick, and some other stuff that I won't even mention. What do I get when I turn 40—a post-mortem?

Uneasy Rider

Dear Uneasy,

Glad you asked. Believe it or not, we're not sadists. But we *are* in the flying safety business, and all those minor indignities are our way of making sure that your physical condition doesn't contribute to a large smoking hole in the ground someplace. As for the extra little goodies we threw in this year—well, older bodies, like high-time airframes, need a little closer inspection as the hours pile up. Maybe it'll ease your sore ... ah ... feelings a little if I explain some of the things we do and what we're looking for during your annual physical.

Roll Up Your Sleeve

Your vital signs (height, weight, respiration, blood pressure, temperature, pulse rate) are a good place to start. Something as simple as a rapid heartbeat could be a clue to the existence of hyperthyroidism, a condition which can produce nervousness and irritability. Or an irregular pulse could signal a malfunction of the heart's "ignition system" with an accompanying tendency to faint—obviously an undesirable trait in the cockpit.

Extremes of blood pressure get the flight surgeon's attention, too. Very low blood pressure is fine, unless it sometimes produces lightheadedness on straightening up from a leaning position (for example, a C-9 driver who's been leaning over for a good look at the new nurse who's been leaning over a patient). High blood pressure is a bad deal for several reasons; even the smaller ones, like a sudden nosebleed on short final, can

spoil your day.

Read the Bottom Line

Eyes and ears obviously have to be checked; hearing loss from long-term noise exposure is a continuing problem in aviation medicine, and an eye test can reveal a lot more than the fact that you need glasses. For example, difficulty in depth perception can result from a subtle imbalance between the eye muscles—which in turn can be caused by a brain tumor or other lesion. And that "poke in the eye"—a special good deal for you over-39 types—is a test for glaucoma, the second leading cause of blindness in the United States. Like many of the other conditions we look for, it's correctable if found in time.

An aviator's ears also need to be checked for more than acuity. Anybody who's experienced a really solid ear block on descent can testify to the incapacitating pain it brings. A quick check of your ability to valsalva can catch a problem in this area before it can get off the ground.

Breathe Normally

Your heart comes in for a lot of attention. Like the engine in an F-16, it's got to keep running if you're going to get anywhere, and there are a lot of little things that can keep it from putting out full power. The stethoscope can turn up some defects, like the murmur of leaky heart valves. And the electrocardiogram, or EKG, required for people over 35 can detect malfunctions in the heart's electrical system which the doctor would be unable to hear, see, or feel.

All sorts of symptoms can result when the heart isn't working properly. A fatal heart attack is, of course, the worst; but lesser symptoms, such as lightheadedness or fainting, can be just as fatal if they occur in flight.

Now Bend Over

One of the disadvantages of getting older (in addition to the realization that all the Sweet Young Things are getting younger) is the increasing risk of cancer of the prostate or colon. This is the reason for one of the additional indignities visited upon you annually after the age of 39, and may have been the reason why Jack Benny refused to get any older. The doctor's examination is backed up by a chemical test to detect blood in the stool—one of the early warnings of the disease. Incidentally, this is one of the things that you should continue to have checked annually, even after you leave the service.

Now, That Didn't Hurt

Laboratory tests are a major part of your yearly physical. We use these to detect a variety of conditions; the chest X-ray, for example, may show signs of lung cancer or other lung disease. Urinalysis is used to ferret out high sugar levels (a sign of diabetes) or excess albumin (an indication of kidney disease). The glucose tolerance test can find indications of diabetes that don't show up in urinalysis, and the blood test checks for conditions such as anemia or VD.

Of course, there's a lot more to the annual flight physical than I've mentioned here. Like any physical exam, it's intended to find out if anything's going wrong with that chunk of protoplasm you're walking around in and to find out in time to let us fix it. But more important to the people you fly with (and over), it assures us that you're in good enough shape to slip the surly bonds and to do it safely.

Have a good flight—and we'll see you next year.

Doc

With the latest addition to the MAC aviator's wardrobe, you can be the hit of the Firemen's Ball — and live to tell about it.

Good News for Aircrews

by Capt Kenneth M. Lewis
MAC/IGFF

The new Nomex jacket–stylish and safe.

By now all you MAC flyers are well aware of the life saving qualities of the Nomex flight suit. But up until now your Nomex ensemble has been incomplete—that old nylon flight jacket could actually undo the good that your stylish flight coveralls provided.

The new product, now available at your friendly individual equipment shopping center, is a Nomex winter-weight flight jacket (CWU/45/P). The jacket comes with a detachable hood to be used in arctic conditions. With this combination of sartorial options, the outfit will replace both your winter flying jacket and parka and make your B-4 bag much lighter.

If you don't think you need it, maybe you should take a close look at a picture of an old style jacket exposed to open flames for only a few seconds. The story that accompanies the photo goes something like this:

This old-style nylon flight jacket suffered only a few seconds' exposure to flames.

It was to be a functional check flight, and the only pilot on board took the right seat. The helicopter was loaded with full tanks and about mid-morning, the lieutenant headed his sling-wing for the FCF area. With necessary checks accomplished and everything within limits, he brought his eager craft back home and shot a steep approach to check for overspeed.

During the last stages of a descending right turn to final, the chopper lost power for reasons unknown. The aircraft crashed and was destroyed by post-impact fire. The pilot egressed through his windscreen which had been broken out during rollover.

Fortunately, the pilot was wearing his Nomex flight suit and gloves. He received second and third degree burns over 17 percent of his body, primarily in those areas unprotected by Nomex. But look at the jacket after a short exposure to flames. You don't have to guess the outcome had he taken a little longer to abandon his burning bird.

Your new Nomex jacket is sure to fare better—it has an outer and inner shell of high-temperature-resistant polyamide (Nomex) material and is interlined with fire-resistant quilted polyester batting. For comfort and convenience, in addition to the detachable hood, it has a bi-swing back allowing for greater mobility in arm movement and envelope-type pocket flaps with Velcro fasteners.

The new jacket with the hood will offer the same protection from the elements as the short parka, plus the protection of Nomex. Will it keep you warm? According to the Alaskan Air Command people who tested the new product in extreme cold, it was "quite satisfactory" and in many ways an improvement over the winter parka.

Well, what about a lightweight Nomex jacket? It's on the way! Within the next ten months, a Nomex bearing a "CWU/36/P" nomenclature will be available to you MAC linesters.

But, in the meantime—see if you can be the first guy on the block to get your new Nomex winter jacket. Then everybody will want one.

Global Notes

A Score of Safety

In March 1976, the Air National Guard's 172 TAG, Jackson, Miss., completed 20 years and almost 85,000 hours without an accident. The unit experienced its last accident back in 1956 when it was flying B-26 aircraft like this one.

The 183 TAS performs the flying mission for the group.

SOF Save

Capt James K. Stephens, 11 AAS, Scott AFB, Ill., has been awarded the MAC Distinguished Individual Safety Award for his quick actions which helped save a life. Captain Stephens, while performing ramp surveillance as the Supervisor of Flying, noted unusual activity at the fuel cell maintenance area where a C-9A was undergoing repairs. Learning that a man was trapped in a fuel cell, Captain Stephens called the Scott Command Post and requested rescue assistance. He then helped in setting up equipment to ventilate the fuel cell and boarded the aircraft to assess the situation. When it became apparent that additional help was needed, Captain Stephens returned to his vehicle and helped coordinate rescue efforts with maintenance and the fire department.

Fast and Flawless

A sudden series of aircraft shudders followed by rapid deceleration alerted a UH-1F crew to engine failure. Their craft was approximately six miles from destination. 1st Lt Larry A. Helgeson, aircraft commander, initiated bold face procedures while 1st Lt Stephen Pindzola, copilot, completed an emergency checklist. A1C William J. Via secured loose equipment on board. Lieutenant Helgeson maneuvered the helicopter into the wind and set up an autorotational glide for the nearest clear area. Skillfully avoiding power lines and buildings in the immediate vicinity, he executed a textbook-perfect flare, attaining the near-zero ground speed necessary to safely negotiate the rough terrain of their landing area. The touchdown was perfect and no damage occurred to the helicopter. Excellent crew coordination, which resulted in a flawless performance from engine failure to touchdown, earned for 1st Lt Larry A. Helgeson, 1st Lt Stephen Pindzola, and A1C William J. Via, Det 5, 37 ARRS, Malmstrom AFB, Mont., the MAC Distinguished Individual Safety Award.

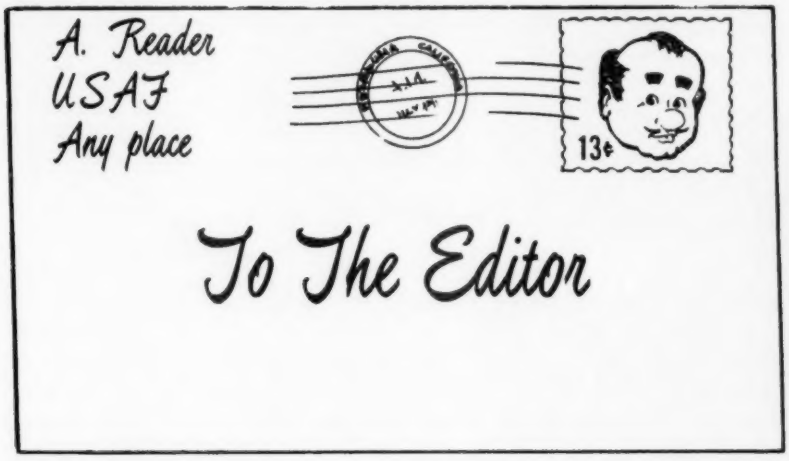
AC Honored

An HH-53 flight examiner aircraft commander with the 1550 ATTW, Kirtland AFB, N. M., was named MAC Junior Officer of the Year for 1975. He is Capt Donald R. Backlund, whose extraordinary heroism and courage during the recovery of the S. S. *Mayaguez* and the rescue of her crew helped earn him this award.

Cool Head

Sgt. Ronald A. Lundrigan, 41 ARRS, McClellan AFB, Calif., was executing a pararescue currency parachute jump when he observed a serious malfunction in the main chute deployment. He immediately deployed his reserve parachute at 700 feet above the ground, but it deployed upward and began tangling in the main parachute's suspension lines. Sergeant Lundrigan grasped at the overhead bundles of his reserve parachute in an effort to retrieve the parachute for deployment. With retrieval complete and with the parachute in his arms, he noted his body's spinning action and threw the bundled reserve parachute out and into the direction of the spin. Shortly afterward, Sergeant Lundrigan completed a firm parachute landing fall on the drop zone. His extraordinary professionalsim and calm, logical approach to his parachute malfunctions undoubtedly saved his life. Sergeant Lundigran has been awarded the MAC Distinguished Individual Safety Award.

Letters . . Letters . . Letters



T-39 Windshield Crack

Reference Jan 76 Quick Stopper "Thermal Shock." The article states, "Facing a potential explosive decompression, the crew . . ."

Word of mouth information I get is that the plastic middle layer of the windscreen is strong enough to maintain adequate pressurization. Can you advise as to the truth of this information?

In the short amount of time I have been flying the T-39 I have heard of at least three windshields cracking. Certainly, if this is a hazard, emergency procedures would have been developed by now. As I read the Dash One, they have not. Perhaps a better explanation of this malfunction is in order.

Warren C. Stuart, Maj. USAF
Flight Safety Officer
Hq, 13th AF (PACAF)
APO San Francisco 96274

★Thank you for "keeping us honest." We have consulted the T-39 Technical Service Section of the Sacramento Air Logistics Center concerning your query. In essence, they feel that, although complete failure of a cracked windshield is unlikely, it is possible, depending on the severity of the cracking. The possibility of a decompression should be considered.

We also learned that a modification is in the mill for the T-39 windshield heat system, which should significantly reduce the likelihood of cracks.

Hypoxic Navigator

As a consistent reader of your magazine, and also a C-141 crew member, I want to bring one of your April photographs to your attention.

I hope the navigator in the photo on page 10, your AIREP's article, does not have a rapid decompression as his oxygen supply lever is shut off on the oxygen regulator.

I also enjoy the C.R. Terror articles.

Yours truly,

SSgt. Gail H. Meyer
14 MAS
Norton AFB, Calif.

★ The sharp-eyed sergeant caught us with our levers down. Thanks for the comments and interest in TMF.

Discipline—Down Under

I have just finished reading an article entitled "Emphasis on Discipline" in your magazine dated January 1974.

It was read with great interest by all members of my unit and was praised very highly. We are all based at the School of Air Navigation, RAAF Base East Sale, and we're all instructors. Some are Navigation instructors and some are General Service instructors; as for myself, I am a Disciplinary and Drill Instructor.

The instruction of new recruits has always been my main task and I am always looking for an ideal way of teaching the meaning of discipline. I can now say that I have one of the best articles on the subject that is available.

I would like to thank you for a most

interesting magazine and article and hope that THE MAC FLYER continues production for many years to come.

John E. Titterton, Sgt. RAAF
East Sale, Victoria, Australia

★ Thanks for the kind words. We on the FLYER staff feel that cockpit discipline is the most important single factor in safe air operations.

Masked MACman Strikes Again!

In our Sep 75 issue, we ran a pair of postal cards airmailed from Japan. In the first, the sender(s) claimed to be held prisoner at Yokota and requested C. R. Terror's assistance, but the second card cancelled the request. Still a mystery, here's another gem in the same inimitable style and handwriting:

O.I.C. Crew Harrassment
Headquarters MAC
Scott AFB, Ill.

Dear Sir,

This is a belated reply to "What's It All About?" (The MAC FLYER, Sep, 75.) F.R.E.D. and the boys are alive and well, and in the system.

A six-hour early alert, no nonavailability, no missed meals but still smiling.

As ever,

F.R.E.D. and the Boys

★Good to hear from you, F.R.E.D. and company.

McChord's Hustling Herks

Reference a Global Note in your April issue entitled "Hercules Hustle at Howard." One of my fellow flyers called me and was rather concerned saying that you had misidentified our C-130 people at Howard. Although the guys are officially flying for the 1300th MAS while in Latin America, the "Herky" people there are all hard working TDY people from McChord's 36 TAS.

Secondly, he thought that perhaps our record there was just a little bit understated. Our guys are flying down there several thousand miles from home in an area where news often goes unreported. The men there are providing MAC airlift for an area several times the size of the United States. They are doing things on a day-to-day basis that, if done at home, would make news headlines. Yet because of their distance from home, the events are usually not printed at all.

The TDY crews in Panama have been putting out a 150 percent effort. We are grateful for your mentioning their work. But a few have shown a little distress at not being identified as members of their own home flying unit, the 36th Tactical Airlift Squadron, McChord AFB, Washington.

Stephen F. Crowell, 1st Lt, USAF
36 TAS
McChord AFB, Wash.

★ No slight intended; we always like to give credit where credit is due. MAC's "rote" troops provide super service to virtually every corner of the globe. Our hats are off to you.

The editors welcome letters from all readers, both military and civilian. Letters should be addressed to:

Editor, THE MAC FLYER
MAC/IGFE
Scott AFB IL 62225

Letters should be signed. At the author's request, names will be withheld. Letters may be controversial in nature but should be written in good taste and address specific issues rather than personalities. The editors reserve the right to print each letter in whole or in part.

Long Suffering Sam was getting a little anxious as he made the final entry on the last of his form 70's. The base ops clock showed just 35 minutes till takeoff time, and the World's Greatest Aviator was nowhere to be seen.

"Sir, how about giving Major Terror another call at his quarters?" Sam asked.

The SOF, an elderly gray-haired major named Shoe, shrugged wearily. "Might as well. All I need today is another delay." He headed for a phone.

Sam was checking out his antihijacking device from the duty NCO as C. R. burst through the door into base ops. Sergeant Thunderstick nearly shot his foot off at the sight; the Portly Pillar of Pilotdom was attired in faded jeans, tennis shoes, and a Budweiser sweatshirt which had seen better days. His pudgy paws and unshaven cheeks were smeared with grease, some of which adhered to the hand-tooled baby-blue leather hang-up bag and Portable Potable Kit he carried.

"Good grief, Boss, what happened?" Sam exclaimed. "You look like you've been cleaning the grill at the ter-

In this episode the Aviator with Avoirdupois experiences a near-terminal case of VFR.

minal cafeteria."

"Not to worry, m'boy," soothed the Round One. "I was merely rendering some expert assistance to a lovely young thing with automotive difficulties. Good for the USAF image, y'know."

Sam looked only slightly relieved. "Well, we'd better hurry; it's only half an hour till takeoff time."

"Tut, tut, m'lad, fear not. You take care of the preflight while I restore my normally exemplary appearance, and we'll leap into the air precisely on time." Hang-up bag trailing behind him, C. R. headed for the officers' latrine.

The Spherical Slipper of Surly Bonds had just finished splashing his chubby cheeks with Linda Lovelace Autograph after-shave and was putting a final polish on his chrome-plated command pilot wings when Sam entered.

"Sir, I'm on my way out to the airplane; you've got a phone call at base ops. It's MAC Centralized Scheduling."

"Drat!" muttered C. R. "It's gotta be Revision Eleven to Plan B. Better come along, Sammy; we might have to refile." The Dynamic Duo hastened back to the ops counter.

Sam listened in as the voice of Capt D. A. MacDoof crackled along the Autovon wires. "Sir, we've got a problem because the MDF39XB4 is crumped at Quagmire and the crew on the MDF39AAX is out of crew duty time and the alert bird from Offul only has a wing load and the weather at Miami Beach is below minimums and besides that, the sun came up this morning. We need to send you up to Andrews to pick up General Fourbanger and his party and take them to Randolph for an interplane. Can you be airborne in 20 minutes?"

The Great One's eyes brightened at the mention of the General's name. "Certainly, m'lad. Tell the man with the stars we'll be on the ground awaiting his pleasure in an hour and a half." He hung up the phone, grabbed a 175, and began scribbling.

Sam looked dubious. "Sir, I don't know about this reroute. There's a weather advisory out for the entire Texas area for severe thunderstorms and tornadoes, and the winds are too strong to make it from Andrews to Randolph nonstop. We ought to—"

"Nonsense, m'boy," the Paunchus Pilot cut in. "Where's your can-do spirit? And besides, old Fourbanger is a personal friend of mine. Sat on one of my F.E.B.'s. This is my chance to return the favor. Now give this 175 to the ops types and we'll begin aviating."

Minutes later the Terror of the Airways was strapping into the left seat of the sleek Sabreliner as his faithful follower did the walk-around. Sam had just begun counting the probes in the number two engine when he realized that the turbine blades were already spinning fast enough to be invisible. He took several microseconds to analyze the situation, and then instantly retracted his feet and waited for the agonizingly sluggish force of gravity to get him out of the way of what he knew was coming next.

Shortly, Sam was scrambling up the steps, plucking some slightly singed eyebrows and listening to the number one engine winding up. Still somewhat shaken by his close call with cremation, he climbed into the right seat and opened his checklist to the before-starting-engines check. "Nose gear pin," he challenged.

"Sammy, you're so far behind that if we crashed, you wouldn't feel it until your retirement ceremony," C.R. jibed. "Forget the checklist;

if you don't know where the switches go by now, you never will." The Gross Gripper of Go-levers shoved the throttles forward and the Teeny Weeny Airliner leaped out of its parking space. "Get the clearance m'boy; tempus is fugiting."

The clearance came through as the T-39 approached the number one position. "Sabre 22 is cleared as filed; maintain FL 310. Departure control frequency is 127.5, squawk 0100. After departure, turn left to heading 190, intercept J-121, climb on course."

"Hey, Boss," Sam protested, "we didn't file J-121."

"No sweat, m'lad, probably just a vector for spacing. Anyway, we've got to get this air'chine skyborne—can't keep the general waiting." The Master Manipulator headed for the runway as Sam scrambled to get takeoff clearance.

As the MAC biz-jet was approaching J-121, Sam contacted Jacksonville Center. "Jax Center, Sabre 22 is passing 11,000, intercepting J-121."

"Roger, 22, radar contact. Turn right, heading 230 for vectors off airways to Eglin."

"Eglin?" C. R. sputtered. "Can't those blip-watchers get anything straight? Tell him to get his Sierra together, Sammy."

A sick realization hit Sam. "Sir, we never canceled our original flight plan. The Andrews flight plan probably never got into the computer."

"Sammy," C. R. said disgustedly, "sometimes I despair of ever molding you into a true professional aviator. Now listen and learn as the World's Greatest demonstrates how to refile in flight."

The Silver-Tongued Fox keyed his mike. "Ah, Jax, 22 here. Must be a little foul-up in the computer. Request clearance present position direct Alpha Delta Whiskey at angels three five zip."

"Calling Jacksonville Center, say again?"

"Rog, Jax, Sabre 22 would like to change destination to Andrews."

"Sabre 22, stand by."

"See, Sammy," C. R. pontificated, "it's simple. Now in just a few minutes we'll—"

"Sabre 22, Jacksonville Center," the controller interrupted. "Unable to approve your request; J-121 is saturated northbound for the next hour. Say intentions."

"Balderdash!" the Petulant Pilot fumed. "They'll do it every time, Sammy; the FAA weenies screw up and we suffer for it. Well, I'll fix 'em. Cancel our clearance, m'boy; we'll press on to Andy - Vee F 'n R."

"But, Chief, MACSUP 1 to 60-16 says—"

"Don't confuse me with those ridiculous regs," snarled the Temerarious Topper of Windswept Heights. "This mission is too important to be governed by the whims of those headquarters twinkies. Get with the program, son, the General awaits." C. R. leveled the Sabreliner at 12,000 feet as Sammy changed transponder codes and notified Center.

Seconds later, the airplane snapped into a screaming right turn as the Master Manipulator swerved to avoid a southbound Learjet. "AARGH! Sammy, did you see that? Why doesn't that nitwit watch where he's going?"

"Well, Sir," Sam answered weakly, "that's what VFR is all about—it's up to us to see and avoid. Besides, we should be flying eleven-five or thirteen-five on this heading—not twelve thousand."

"Hmmph. Number Two, sometimes I think you don't know anything but rules." C. R. reluctantly climbed to a proper VFR altitude and settled down to flying.

Some time later, the minijet was cruising smoothly above a solid undercast. "Put channel 78 in the tacan," the Corpulent Challenger of Cumulonimbi directed, "and we'll press on in to home plate."

"Okay, Boss, but we're going to have a tough time finding the base through these clouds. And besides, aren't we supposed to be making position reports every so often? I seem to remember something about that from UPT."

"Had you been observant, m'boy, you would have noticed that I have already selected the proper frequency for Richmond Radio," C. R. boasted. "Give 'em a call and get the latest Andrews weather."

The Flight Service Station re-

sponded promptly. "Sabre 22, Richmond Radio. Andrews special observation, 2118Z: indefinite obscured, RVR less than 1,000 in fog, winds calm. Say intentions."

The Arrogant Aeronaut looked a little sick as Sam contacted Washington Center and received clearance to the North Beach intersection for holding. His disposition hadn't improved much by the time they were cleared for a GCA to Andrews some 45 minutes later. But the weather had improved almost to VFR minimums, and as the PAR controller turned Sabre 22 to downwind, C. R. was nearly his old self again.

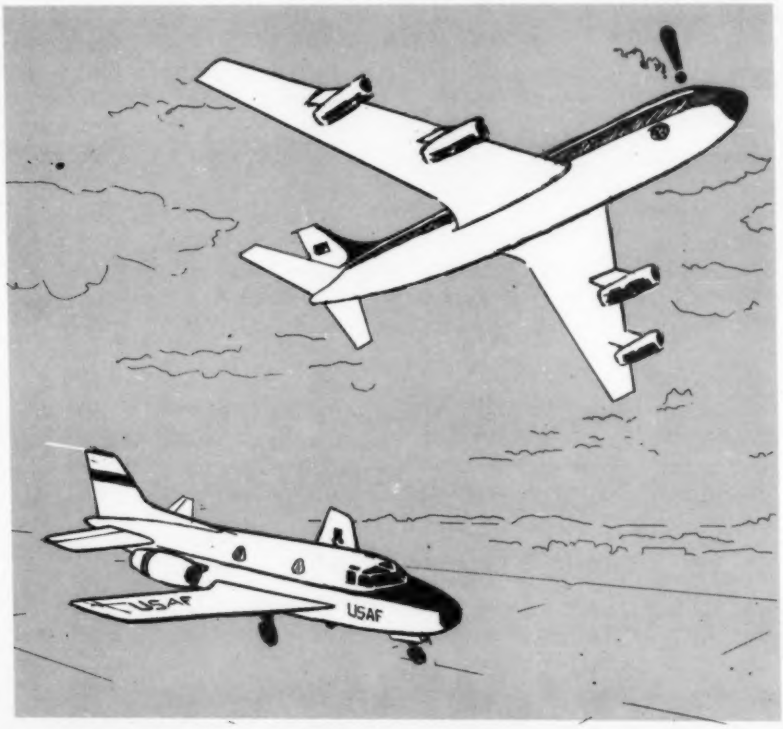
"Ask 'em for a short pattern, Sammy," he directed. "We're late already—we need to save every second we can."

But Approach Control had other ideas. "Sorry, 22, unable short pattern due to—"

"Eureka!" The Rotund One's shout drowned out the rest of the transmission; C. R. had spotted the runway. "Call tower and report base, Sammy; we're goin' visual to expedite the approach." Sam's body sagged in the seat as the Merry Manhandler of Machinery racked the aircraft into a 60-degree bank toward the runway.

The faithful follower knew there was no point in arguing with his Bulgy Boss, so he switched to tower frequency as C. R. dropped gear, full flaps, and popped the speed brake on short final. As the UHF receiver channelized, a highly disturbed voice cut in in midsentence.

" . . . Force One on the go, changing to approach control. And I want the number of that T-39 that just cut us out of the pattern."



Sam turned pale. "Chief, do you realize what we just did?"

"Forget it, Number Two," C. R. replied in a less-than-confident tone. "General Fourbanger is probably in such a hurry that we'll be out of here before anybody has time to ask questions."

As the little Sabreliner rolled to a stop in front of base ops and a huge crowd of stars and eagles, General Fourbanger was nowhere to be seen. In seconds, a very irate colonel was in the cockpit and practically breathing down C. R.'s neck.

"Major, get your tail off this airplane and into my staff car right now," the colonel bellowed. "You've got a lot of explaining to do."

"Ah, well, Sir," C. R. stammered, "I have to take General Fourbanger to Randolph, and, uh, if this is going to take very long—"

"Forget it, Major. General Fourbanger left an hour ago on another T-39. Now let's go." Sam watched as a thoroughly downcast C.R. followed the colonel to the staff car.

As the car disappeared in the general direction of Security Police headquarters, a metallic voice boomed from the base ops PA system. "Will the aircraft commander of Sabre 22 please contact MAC Centralized Scheduling for an itinerary change?"

Quick Stoppers

A Point Hammered Home

The C-141 was on a missed approach during a local training mission when the crew heard a loud bang and noticed that the number two starter valve open light was illuminated. Engine vibration indicator readings apparently confirmed the starter valve failure, so the crew shut down the engine and made an uneventful emergency return.

On the ground, they discovered that it hadn't been a starter valve failure after all. The erroneous indications were caused by the aft outboard cowl door as it departed the aircraft. Damage to the pylon, thrust reverser, and cowling amounted to over $19,000.

Sounds like a hasty preflight which missed an unsecured door—but it wasn't. Investigators found that the indicator pin showed a locked condition regardless of the actual position of the lock thrust pin. Both the indicator pin and the locking mechanism had been damaged when the pin was hammered flush with the cowling!

Frightning Lightning

Nature's wrath usually scares hell out of the bravest of aviators—but add a few little man-made problems and the result might be aircrew paranoia, hypertension, chronic insomnia interrupted by periods of cold sweat, and fear of flying. Weigh this one, brothers of the sky.

The battle-dressed Hercules was uploaded at a friendly Army base with support equipment to be delivered to a northeastern airdrome. Unknown to the aircrew, a three-KW portable gas-powered generator was packed *inside* a jeep trailer and *under* a tarpaulin; the trailer was loaded on the aircraft in the forward section with the tongue down.

All went well as the aircraft cruised at FL 150, until the crew noticed that the cabin altitude was at 8,000 feet and climbing slowly. Then the odor—(sniff, sniff . . . smells like gasoline.) The loadmaster confirmed suspicions: the volatile substance was leaking from the jeep trailer. He guessed that about a half gallon of high octane had vented from the cap on the portable generator heretofore unnoticed—and unmanifested.

Now what? Depressurize and compound the venting problem? No. What about an emergency descent to 10,000 feet? Good idea. Might reduce the perspiration index.

Enter Mother Nature. With no weather returns on the scope and a forecast calling for "scattered CB's," the Herky crew was totally surprised, to say the least, at the electrostatic display which ended with a lightning strike to their radome.

The pilot asked for and received immediate vectors back to the departure base. The recovery was uneventful, but then the crew wasn't looking for an encore.

Inspectors found that the generator was improperly placed in the trailer and serviced to at least three-quarters full. Since the trailer was loaded tongue down, this allowed the fuel to collect at the generator's filler neck and vent as the cabin depressurized. Aircraft pressurization difficulties were caused by leaks found around three APN 150 access panels.

The flint got awfully close to the steel in this episode.

Nonstop Huey

Most fling-wing drivers are intimately familiar with the procedures for engines that quit. But what do you do with one that *won't* quit?

The crew of a UH-1N were faced with this odd problem after completion of a routine mission. As the throttles were moved to flight idle, the number two NG decreased normally to 61 percent, but number one remained at 90 percent. Numerous attempts to change r.p.m. with the throttle and the beep actuator proved fruitless. The pilots decided to shut down number two normally and then to shut down number one with the fuel shutoff valves.

As the number two throttle was closed, the engine wound down normally. So did the number one engine, with no input of any kind from the cockpit controls. Number one ITT then rose to about 320° C, but stabilized at 120° after 15 seconds of engine motoring. The pilots completed the engine shutdown checklist without further incident.

Investigators found that the link fuel lever self-locking retaining nut had failed, disconnecting the linkage between the automatic and manual fuel controls.

Hot or Cold?

Center had just advised the Starlifter crew approaching an island base that the restricted area was "cold." Besides, the C-141 would come no closer than two or three miles from its boundary. Relax.

Well, luckily they didn't relax. A sharp eye caught an approaching formation of four fighter-type aircraft. So warned, the AC whipped his big bird into a tight left turn, thereby avoiding a mid-air with number four. Not by much, though; the fighter passed approximately 500 feet ahead of and 200 feet above the puckering MAC crew.

There's just no substitute for eyeballs.

Misery Loves Company

The Sabreliner was on a proficiency training mission at an overseas base. The gear was lowered for a PAR approach, but the right main indicated unsafe. The crew broke off the approach and headed for home, accomplishing checklist procedures for the gear malfunction on the way.

They hadn't succeeded in getting a safe indication by the time they got back to home station, but they did find out they had company. Another T-39 had arrived ahead of them—with the same problem on the left main!

Now number two in the emergency pattern, they held while the other airplane landed. Wouldn't you know it? The unsafe gear collapsed, closing the runway, and so sick Sabreliner number two headed for another base nearby.

Since the malfunctions were so similar, the crew decided to have the runway foamed. This turned out to be a smart move; the right main gear collapsed shortly after touchdown, and the wingtip settled into the foam as the aircraft slid to a stop. Both crews came through unhurt.

The cause of both incidents was suspected to be blockage of the drain hole in the downlock actuator assembly, with subsequent water accumulation. And to top off the amazing string of similarities, the two aircraft had sequential tail numbers!

Qs

Wind Shear on Departure

We've seen lots of accident reports concerning wind shear on final approach but few on departure. Here's a switch.

The commercial jet crew waited at the approach end of runway 35 for takeoff. Prior to their departure, they heard reports of wind shear on climbout by two of their fellow union members. A 727 had reported "some pretty good up and down drafts from 200-300 feet." Then a Convair described "a pretty good shear about half way down 35, like the other aircraft called it—about 200 feet."

It didn't sound serious. The waiting crew observed the departing aircraft and concluded that there was no reason for delay. Cleared for takeoff.

Shortly after becoming airborne, the Boeing's airspeed fell from 156 KIAS to 120. Power was added beyond takeoff settings, and yet the airliner mushed into the runway, skidding some 1,900 feet and coming to rest approximately 1,200 feet beyond the runway. The aircraft broke up, but all crew and passengers egressed.

". . . Thunderstorms in all quadrants, moving east . . ." the weather observation read. Strange how the old cumulonimbus is a party in the majority of cases involving wind shear. Is there a message here?

Gearless Grease Job

It was a dark and stormy night when the pilot of Drag 14 asked for the strobes in order to complete his low approach to runway 17. During the approach, he encountered a moderate rainshower on final. But no problem. And so another practice low approach was accomplished. Again a rainshower on final—again, no problem. But the third time around, Drag 14 received vectors around weather activity, climbed to 3,000 feet, and immediately descended to 2,000 feet. About three miles from the outer marker, the pilot turned the aircraft to intercept the localizer. He was momentarily distracted while adjusting the windshield wiper controls. A nonstandard approach, weather conditions, and cockpit distractions broke the usual routine and the gear lever was never placed in the down position. With flaps down and speed boards out, the power setting was too high to set off the gear warning horn. But both the pilot and the EWO verified the gear check via interphone.

When tower called Drag 14 to issue taxi instructions they got no answer and sent Mobile out for a "look-see." The twin engine jet was found neatly on centerline, cockpit open, battery switches off, and with a somewhat lower profile.

Findings: No gear check radio call had been made, and the weather conditions coupled with darkness prohibited Mobile from visually checking a gear-down configuration on final. But why had both crew members verified a gear-down condition?

after deadline . . .

FINAL REPORT ON C-141 ACCIDENT -- Investigators have found materiel failure to be the cause of a recent major accident, when a C-141 landed with the nose gear retracted. Failure of the NLG up/downlock actuator kept the nose gear in the well, but cockpit indications showed the gear to be safely down and locked! Ruptured hydraulic lines in the nosewheel well caused a fire and the loss of normal brakes on landing, but passengers and crew egressed with only minor injuries.

Some difficulties were encountered during egress. Dense smoke in the cockpit made exit difficult for the flight crew, and the crew members who used the number one escape hatch were unable to remove the escape rope located next to that hatch. Crew members and passengers in the rear had trouble removing the side escape hatches, which were partially blocked by aft-facing seats, rolled-up troop seats, and oxygen lines.

HOW ABOUT A MAG CHECK? We'd like to know whether your copy of the FLYER came through the printing and distribution processes intact. If you've noticed any problems, drop us a line at MAC/IGFE, Scott AFB, IL 62225 or call AUTOVON 638-3534 (commercial, 618-254-3534). Our Quality Control Officer will be grateful for your help.

NEXT MONTH --

* Sometimes keeping a secret can cost someone else his life. "Tiger One" tells you how it can happen.

* For those of you who are interested in a new kind of meditation, THE MAC FLYER interviews that little-known but highly scrutable Oriental philosopher, the Maharishi Beam Bogie.

* Are you dazzled by death-defying daredeviltry and awed by aeronautical antics? You're in luck -- "The Flying Circus" is coming to town.

U.S. GOVERNMENT PRINTING OFFICE: 1976-665-669/12

Touch 'n Go

THAT'S RIGHT, LIEUTENANT—JUST PUT "ENTERED IN ERROR" AND YOUR SIGNATURE.